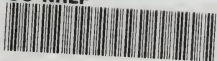


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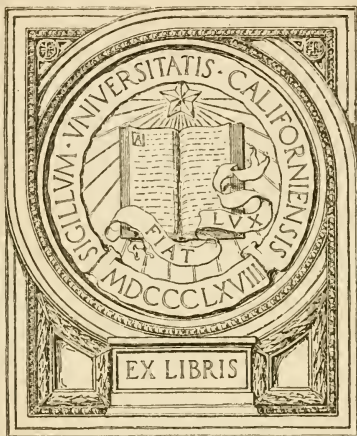
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THE
MECHANICAL CAUSE
OF
Gravitation and the Tides
BY
H. D. HOUGHAM





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OAKLAND, CALIFORNIA
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1899
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I have written no preface for this pamphlet. If it has merit it will write its own preface in the future; if it has no merit, it will do the same thing for its epitaph.

H. D. HOUGHAM.

Oakland, Cal.

Oct. 1, 1899.

THE MECHANICAL CAUSE OF GRAVITATION AND THE TIDES

DEAR READER:—At the time I authorized the following interview in the CALL, I had not decided to give the result of my experiments and study to the public; as you will see, there is no explanation of the mechanism of the system; for, as I believed then, and still believe, there is an economic value in my discovery. Failing health, however, has decided me to present it to the world, and though the explanation in this pamphlet may be so crude and rambling as not to be rightly understood, I have tried, as much as possible, to avoid the use of technical terminology, and to use plain, household words that all can understand,—I am not writing for a class, but for the general public. I claim I can maintain my theory, and am willing to go before any body of men with full faith in my ability to demonstrate the correctness of my theories.

THE INTERVIEW

[From the San Francisco CALL, April 4, 1897]

MR H. D. HOUGHAM of Oakland thinks that he has discovered the mechanical “why” for gravitation; the “why” whose existence Sir Isaac Newton conceded, and at the same time confessed that he could not find it.

Mr. Hougham has been working over the problem for forty years, and he now believes that he has solved it, and that success has finally crowned his labors.

The scientist was visited in his home across the bay by a SUNDAY CALL reporter, to whom he talked most interestingly concerning his supposed discovery of a new principle in mechanical science.

“After forty years of experimenting and study,” said Mr. Hougham, “I claim to have discovered the mechanical and mathe-

mathematical principles in which electricity, heat and other forces of matter, both materialized and etherealized, operate to produce many of the phenomena that we see in nature, as we call it, but as I believe there is an economic value in my discovery, at present I can give you only some of the cardinal points leading up to it.

"When Newton picked out the latin words 'centrum peto' and 'centrum fugo,' out of which he coined the two English words centripetal and centrifugal, and applied them as names to the two motions or forces which he claims to have discovered and explained that always exist in a body revolving on an axis, he assumed at once that our earth was endowed with the same condition of force and motion, and as he found that the centrifugal force was from the centre at a right angle from the radius of that centre, he found that force not to be in harmony with world-building, and then claimed to have discovered what he called the law of gravitation to counteract his other force—that is, a law that clothes matter with the power of acting at a distance, although he admitted that he believed that there was a mechanical 'why' for gravitation, but he could not find it, and claimed the credit of discovering only the mathematical 'why.' The mechanical 'why' is what I claim to have discovered, and I do not claim it as a theory alone.

"I would not give a fig for any man's theory or a cent for my own if I had one, if I did not have something tangible behind it. I claim in describing it I can materially demonstrate, mechanically illustrate and mathematically prove it. If I should go into my mill to put in some additional machinery and I should find that some of the old pulleys were running the wrong way to suit the new pulleys, what would I do? Reverse the engine and shafting? By no means. I would cross the belt and the new pulley would run the right way. Now, that is just what nature does. She crosses her belts. But one may say that there is no such thing as a visible tangible belt in the nebular hypothesis. I grant it; but what is the operation of a visible tangible belt? Nothing but force operating upon the lines of least resistance within the form and substance of the belt, and that is what electricity and all other forces in nature do,—always act on the lines of least resistance within the form and substance of whatever they are acting in, and the forces in their operations in nature as we call it, cross these lines of least resistance, and the scientist has never been able to explain their mechanism. They point out the many crossed lines in astronomy and physical geography, and the crossing of the nerves as they pass

from the spinal cord to the brain at the medulla oblongata, the motor optic, and nearly all the nerves of the human and animal body on which flow the nervous fluid, but they have never been able to explain the mathematical and mechanical operation of these systems of vibratory energy, and like our earth, the cyclone, waterspout, the shot falling from the shot-tower, hail, rain, and many other systems of energy that seem a puzzle to them—that is what I claim to be able to explain!

“The explanation carries with it no puzzle or seeming inconsistencies, as there is in some of Newton’s theories. Take one of his theories that space has three dimensions, then just consider a body of matter like our earth, 8,000 miles through, with all its mountain ranges and inequalities, with free access to this space revolving upon but one axis, what is there to keep it from deviating or turning on some other axis, and if it should, what is there to stop it or bring it back? Within the last few years I have read a number of pamphlets from different authors, wherein they claim that there is the fourth dimension to space, and our failure to comprehend it is the cause of our ignorance of the mechanism of the universe.

“Now, I deny that there is any such thing as dimension to space. What we call space is a condition between forms, and is not an entity, and has no existence in fact, and you cannot give dimensions to a non-existing nothing. What seems to designate to us the condition we call space is nothing but the principles that govern the possibilities and impossibilities of the vibratory energy of the absolute of the form, together with the joint product of that vibratory energy governed by all the possibilities and impossibilities of the motion of the form itself.

“The reason why, as I claim, that there is stability apparent in our planet, is that the motion that we see is the elusive motion of form, that is, the combined product of the invisible mathematical, mechanically organized systems of the vibratory energy of the absolute of matter, or the mathematically arranged units of form.

“In a system that I can show is a spontaneity in nature wherein all the systems so arranged themselves as in the snowflake that the vibratory energy is constantly recurring back to itself, or back to first primary motion, so that, when the system is once created, like a waterspout over the ocean, for instance, every system of vibratory energy embodies within itself both cause and effect, for the kinetic energy of each system is so utilized by crossing the lines of least resistance, that all the generative forces in the form are

turned in upon themselves, and create a pressure toward a common center. I can show that that system is in harmony with world-building without the invention of any law of gravitation or any other law separate from matter or force, for a law is nothing and does nothing.

"Laws do not execute themselves. It takes force to create motion.

"To show how easily Newton might have been deceived, I will illustrate. I will place you in a boat with a man rowing you due west. You know the boat is going west; you see the man rowing you west at the same time that a wind is blowing you due north. You know the boat is going north. You feel the wind blowing you north. Now, your judgment and understanding, governed by your reasoning faculties, tell you that the boat cannot go north and west at the same time in separate paths; that the two systems of vibratory energy, created within the form and substance of the boat by the two forces, the man and the wind, impel the boat to form a resultant motion, and grant, for this illustration, that the force of the wind was equal to the force of the man, that resultant motion would be due northwest.

"Now, suppose you could not see the man nor feel the wind, and the existence of those two separate and distinct causes were unknown to you, and could not be recognized by any of your senses or modes of observation, what would you say was the cause of the motion of the boat northwest, which you see? Would you say, as Newton did about that apple, that there was something in the northwest that attracted it?

"You see in this illustration out of the many possible motions of the form of the boat I have employed only two, and out of the possible number of systems of vibratory energy that could be created within the form and substance of the boat by force, I have employed only two.

"Now I want to say about Newton's apple, that the apple before it fell from the tree was fulfilling all the possibilities of motion and vibration and was only a part of a system, the forces of which are so mechanically and mathematically arranged, that the system controls and utilizes all of the centrifugal and kinetic energies in such a way as to recur them back to the system and create a motion and pressure, and when the apple fell it was obeying a force and not a law, and that force was a product of vibration, and that vibration was within the substance of the apple and not

outside of it. Nature never gets outside of itself. If it could, Newton might put his centrifugal force where nature could not handle it.

"If you are a contractor and I give you a job to lay a stone sidewalk, about the first question you will ask is, in what shape do I want the block put down. I will tell you that there are but three shapes that will fit a superficial area without interstices between, and they are the equilateral triangle, the hexagon and square. You may make forms all your life and make untold millions of them, but you never can make forms but the three, that will fit a superficial area without leaving interstices between, but all the millions that you could make equal only the three, for the three embody all their lines. And so it is with the solid figures. There are but five solid figures that can have an equal mathematical and mechanical division with a common center, and they are called the platonic figures, after Plato, who discovered them. Now you may make untold millions of solid figures, but you can never make one that can have a mathematical division with a common center but the five, and all the millions that you can make will equal only the five, for they embody all their lines.

"So, too, with the principles of vibration and life that run this universe. There are millions of conditions of vibration, as many as there are forms in it, or as many as all the forms you can create, but there is but one condition, or system of vibration, and life, wherein the vibration recurs back to first cause, or primary motion; but all the millions of conditions of vibrations that you can create equal only the one, for the one embodies all the others. Nature never gets outside of itself. And this recurrence of the vital force of life back to the system of life, as I can show, is what causes the thud or pulse in the human and animal system or body, and that ever-present pulse can be detected in every and all forms of organized life, even back to the protoplasm; and not only in organized life, but in organized force or energy, as in the galvanic battery, the waterspout, thunder cloud or storm, and even in the lines of force in the stationary magnet. The ever-present pulse can be detected, and so it is from the planet on which we live down to the smallest organization of life or force within its grasp.

"Some scientists tell us that evolution is a spontaneous change from a uniform structure, or a change from a homogeneous to a heterogeneous condition. Now what I claim is that the spontaneity is in the uniformity and not in the change; that the

change is caused by the environments. What makes it seem to us as a spontaneity is because the environments are ever present within the uniformity of the structure of the vibratory system that runs the planet on which we live and holds in its grasp all forms that can evolve and binds them within some kind of environment.

“The most discouraging part of the work of a student is seeking the truth. After finding something that he thought real, he discovers that it was only an illusion, and that the real is still further away, and after he has followed his investigations for a lifetime and cleared away illusion after illusion from his bewildered senses, he falls back upon his reasoning faculties and asks himself the question: Is there an absolute reality within and beyond the reach of human ken, and if there is, is all this side of it a world of illusion?

“To show you what I mean by illusion I will illustrate. I will place eight cannon balls on the arms of a four-foot wheel and give that wheel a certain revolution and it will look to you like a solid iron rim or balance wheel, but you know it is not, and why? Because you have been undeceived. You have seen it start and stop, or seen some other wheel start and stop, but if you had never been undeceived, you never would know but what this was a solid iron wheel. All the knowledge that comes to you from the outside world comes to you through some of your five senses. Now there are four of your senses that have nothing to do with the analysis of that problem; you cannot smell it, you cannot taste it, you cannot hear it, you cannot feel it, and the only sense that you have left, your sight, is completely deceived, and if you had never been undeceived you never would know but what it was a solid iron rim.

“Now, if eight cannon balls, large objects that you can ordinarily see with the naked eye at a very slow velocity, can so deceive the only sense you have that has anything to do with the problem, and make you believe that a condition or form is an entity when it is not—make you believe that an illusion is a reality—how much easier it is for the indescribably small atoms that cannot be seen with the best microscope, with an inconceivable velocity, to deceive any and all your senses, and make you think other things are real when they are not, but only the condition of something that is real. What the something is we do not know. Call it atoms, call it spirit, call it electricity, call it force, call it

mind, call it God ; but calling an unknowable thing a name gives us no additional knowledge of what it is.

“I see that lamp-post there, and why do I see it? I see it because there is an intervening medium between me and the post, and the form of that post is vibrating through that medium on to the retina of my eye, thence across the optic nerve to my brain, making me cognizant of the fact that the post is there ; but if you could take away the intervening medium and create an absolute void between me and the post, I never would know that the post was there. How many intervening mediums exist between our senses and forms, we do not know. Between the hardest steel and the X ray there are many. How many beyond the X ray no man can answer.

“What I claim is that there is the last intervening medium, the absolute of form or what we call matter ; the absolute reality of this universe can act as an intervening medium between all the forms it creates and the human mind, but there is nothing to act as an intervening medium between itself and the human mind. Any gross substance cannot act, and a more etherealized or spiritual substance there is none. I claim that no human being will ever know what the absolute reality is ; that there always will be an empty void between them, but what it does and how it does it is a problem that can be solved by the human mind.

“You ask me what it is? I answer it has no is. What is it like? It has no like. But when you ask me what it does, I say it does nothing only through form and in form. That is what I claim to be able to explain ; that when it acts in form and through form it acts mechanically and mathematically, and in no other way.”

The preceding interview sets forth some of the phenomena that I claim to be able to explain, but as I cannot treat of them all in a short pamphlet like this, I will take up but two of them here—Gravitation and the Tides—and leave the others for a future effort.

Now, on the question of Gravitation, I will say that all motion of form, that we can see or recognize by any of our senses or physical modes of observation other than deductions of the intellect through the process of our reasoning faculties, is produced by the joint forces of some condition of vibration of the absolute or ultimate substance composing the form in question. To make it more

clear, let me illustrate. I will take ten oranges in my two hands and put them together so that they will touch each other, and ask you what I have. You will say that I have a bunch of oranges or a cluster of oranges, but I will tell you that a cluster or a bunch of oranges is not an entity and has no real existence; that it is only a condition of the oranges; take away the oranges and where is your bunch or cluster? Then I will move the cluster north and ask you what I moved north, and you will say, "The cluster." I will say, "No, it was the oranges." There was nothing else to move, and the motion of the oranges is not real, only an illusion of our senses; the only real thing that moved would be the absolute or ultimate substance of the form of the oranges. Apply the same principle to the motion of all forms. Although the absolute or ultimate substance of all forms may not be recognized as possessing form or tangibility, as the oranges do, yet we must admit that this universe is not entirely an illusion save to the senses; our intellect will decide that there is a reality in it, even if it is hidden from our senses within the form. And if the real exists, it must be the foundation on which the mechanism and mathematics of this universe is based, and not on the unreal and illusive form. I claim that the reason that the scientists have made no better progress in explaining the mechanism of the universe is that they have used the wrong kind of mathematics. Because there is no limit to the divisibility of form that is recognized by our senses, they tell us there is no limit to figuring on the conic sections and the squaring of the circle; that there is no limit to the use of the decimal or vulgar fraction and that the circle cannot be squared. Now, I claim that there is a limit to the divisibility of form, and that limit lies between the form and the real that creates and maintains it, so when you get into the realm of form to figurate, there is no limit to the use of fractions until that dividing line is reached; but when you go into the realm of the reality to figurate, you must leave your fractions behind, for you are figuring on something that was never created, never can be divided, changed or destroyed; and here is where the mechanism and the mathematics of this universe rest, and this I hope to be able to show by self-evident facts that I shall present. I believe I shall demonstrate that the revolutions and motions that we see are not causes, but the effect of the invisible systems of vibration behind or within them, systems of vibration that produce the only motion that we can see, the motion of the form. Now, when I speak of forms, I mean to include all forms, both material and ethereal, to include electricity and nebulae,

as well as iron and stone, for all forms are governed by the same principal of limit to the possibility and impossibility of the number and condition of their motions, both primary and kinetic. I will now try to set out some of the cardinal principles of my theorem. From any given point in space, form can move in opposite directions, but it is impossible for it to move in opposite directions simultaneously, though it can move in different directions at the same time. The question arises, how many? The answer is, three, and no more; one motion for each dimension of form—length, breadth and thickness, or what some scientists call the three dimensions of space. When form is moving in two separate and distinct directions at the same time, there is but one resultant motion; but when form is moving in three separate directions at the same time, it has three separate and distinct resultant vibratory forces. This principle of limit to the possibility and impossibility of the vibratory forces of the absolute of the form in the form makes the unreal and elusive form appear to our senses to act; what some scientist or professor terms, Governed by Law, the Law of Motion, The Law of Mechanics, but they have never told us how a law acts to grant, prohibit, or create motion to a form, and they never will as long as they look to the unreal form instead of to its real units for their knowledge. Now, these three vibratory forces above referred to merge into a common product of visible motion. As the square of the distance from the lines of its primary motions, and the only motion that is visible about this, is the motion of the form, the mechanism within the form that is not seen is the vibration of the absolute or ultimate substance of the form, and when all the conditions of vibrations are created that can be created, there exists a uniformity of action and a mechanism of structure in the lines of force within the form. Now, if form cannot *move* in opposite directions at the same time, it cannot *revolve* in opposite directions at the same time, but it *can* revolve in *different* directions at the same time, and the question arises, how many? The answer is, three, and no more. Three first or primary revolutions, one revolution for each dimension of form, or each possible three planes of vibration in the form. All the powers in the universe cannot make a body or form revolve in more than three directions at the same time on three primary axes. Not that form is real, but that the real within, that created and maintains it, cannot vibrate in more than three planes at the same time within the form, for to exceed that limit would be granting to substance the power to annihilate itself, or move in opposite directions at the same time,

with the attributes of Omnipresence. When matter or form has free access to space, like a rain-drop, or a shot falling from a shot-tower, it first commences to revolve, simultaneously or alternately, on three axes that produce three resultant revolutions that merge toward a common revolution, as the square of the distance from their primary lines of force. Let me describe the mechanism in detail. Take a form of electricity or nebula, or a form of any other matter, either visible or invisible, tangible or intangible. They are all governed by the same principle of action when free to act. Take for this illustration a form of nebula regardless of its shape, for out of the millions of shapes into which it can form, it is impossible for it to have more than three dimensions, length, breadth and thickness, or three planes of vibratory action. Now let this form of nebula commence to revolve on three axes, either simultaneously or in rotation. You see the three axes would all be at right angles to each other, and following the lines of least resistance of each others revolution, they will maintain that right angle position if the form has free access to space and as there is no infinity in stability until all the possibilities of motion have been created in the form, for as there is no stability in a form revolving in free space on one primary axis, the revolution on the other two possible axes becomes a spontaneity ; for as there is no stability, deviation on the other axis is sure to follow, and deviation is revolution and the limit is three. You see the instant the three revolutions are created there will be three resultant revolutions, and each of these resultants will form a resultant with one of the three primary revolutions that created them, and merge into one common product or revolution, and the three resultant revolutions will form a resultant with each other and merge that vibratory force to the same common centre or revolution as the square of the distance from their primary lines of revolution. Now, this product of the primary system is the only motion that can be detected by any of our senses, and is a visible revolution of the form on one visible axis, and as I show in the interview, in the illustration of the boat and the man, when three primary revolutions are not visible or not recognizable by our senses, the cause of the product becomes a puzzle to those who have not gone deeper into the mechanism of nature. Now, the product of the primary system, this resultant revolution on an axis, produces within the ultimate substance of that form what Newton called the centrifugal force of a revolving body, and as the three primary revolutions transferred their centrifugal force to the visible revolution, and the

forces between the primary and resultant was an action of the units and not the form, the primary revolutions display no centrifugal force save in the product. A body revolving on one axis will manifest centrifugal force, but the instant the body commences to revolve on a second axis, the centrifugal force is transferred to the resultant revolution. Now, I will try to show how the other invisible system of kinetic energy operates to utilize and control the centrifugal forces of the resultant revolution and throw them back into the three primary revolutions completing the endless chain of vibratory cause and effect within the form and complete a uniformity in the mechanism of that vibratory system. Let me say here that the words "inertia", "momentum", "centrifugal force" and "kinetic energy" all relate to motions, but I have selected "kinetic energy" as the term to express what I mean when dealing with forms that are already in motion. To better understand it let me illustrate. I will place a grind-stone hung in bearings on a platform car going north on a true, level, straight track at the rate of sixty miles an hour. If the stone is not revolving in its bearings there is no kinetic energy, but momentum and inertia the same as the substance of the car; but revolve the stone in its bearings and the resultant motion or energy produced by the joint product of the motion of the car and revolution of the stone is what I call kinetic energy. The reader will note that, if the stone revolves on the car with its axis vertical, that there will be two conditions of kinetic energy in the stone, one in each half of the stone. If the side of the stone facing north is revolving east, the east half of the stone's motion will be in conflict with the motion of the car and the west half will be in union with the motion of the car, and form a stronger kinetic energy than the east half. You see the difference of the kinetic energy is divided by halves in the stone, but switch the car off onto a curve or circle from the straight track, say of a mile radius, the instant the kinetic energy changes from a dual condition to a quadral condition in the stone, there will be two quarters of the stone where the forces of the car and stone conflict, and two quarters where they conspire, and that condition of motion or force is constantly changing and swinging around in the stone and always faces the center of the car's orbit or revolution, and the stone revolves around in that changeable condition of motion and kinetic energy combined, the same as the earth does in her plane around the common center with the moon; and here you have the mechanism of the tides. In one plane or dimension of form, as described

in another part of this pamphlet, the four quarters represented by the twenty-four hours, six for each quarter, a low tide facing the moon in one quarter and a high tide and the same on the opposite side of the earth; and this kinetic motion is limited by the same limit of the three dimensions of form that govern primary motion; and as I deny there is any such thing as dimensions to space, either three or four, and as it is a self-evident fact that there are but three dimensions to form, yet I hope to be able to show how form, although it cannot move or revolve in more than three directions in its primary motions at the same time, not only can but does go into the fourth condition by a union of all the possible motions of the two systems of primary and kinetic motion. In fact, it is a spontaneity in the nature of matter or substance, whenever form has free access to space, as in the case of the rain-drop, the fourth condition of motion is the final limit of motion; that a sphere is the final limit of form, the mechanism that that fourth condition of motion creates, when form has free access to space with a pressure toward a common center called gravity. The reader will note in the interview what is said about the three forms that will fit a superficial area, and the five solid figures. Now, the limit of form, the sphere, is not created by a single act of vibration, motion or revolution, but by a succession of different systems of vibration and revolution that work in mechanical harmony, that follow all the lines of the regular bodies from the lowest to the highest, the lines of least resistance defined by the triad condition of motion. Nature's limit of primary revolution marks out the lines of the tetrahedron and the equilateral triangle, and the whole system when in action does not change its parallelism. The six poles of that triad condition of revolution define the lines of the hexahedron and the square, and the six resultant revolutions of the primary and kinetic systems, with their twelve poles, define the dodecahedron and hexagon. The eight poles of the fourth condition of revolution represent the octahedron and triangle, and the eight poles last named, and their unison with the resultant poles of the dodecahedron, represent the icosahedron, the form of twenty faces. Thus you have all the regular bodies. The platonic figures well-defined in nature's mechanism, like the motion that creates them, are limited in number, and on these limits rest the mechanism and stability of the universe, systems of vibratory revolution that are constantly changing their lines of force within the form, by uniting, with the lines of force, the kinetic systems of vibration and revolution, thus acting in a dual mechanism in each plane of

action or dimension of the form, continually renewing and changing the lines of force from the tetrahedron, by graduation through all the lines of the regular bodies to the icosahedron, a twenty-sided regular body, one of the platonian figures, and from that to the sphere, the final limit of the form, as the carpenter's auger is the final limit of the primary motion of any or all of his tools. If it were not so, some genius would make a tool beyond an auger, but it never will be done unless tools can be endowed with the attributes of Omnipresence. For the auger when in use is fulfilling all the possibilities of primary motion, centripital, centrifugal and forward, and no tool can do more, for in order to do more it would have to move in opposite directions at the same time in one of its planes of dimension, length, breadth or thickness; but if the auger was composed of a pliable or plastic substance, and had free access to space like a rain-drop, or a waterspout, so that the spontaneous systems of kinetic motion, with their cross-lines of least resistance could unite with the primary motion referred to when the auger was in use, matter or form would then go into the fourth condition of motion, the final limit of motion, and form a sphere, the final limit of form. If it were not so, some ingenious carpenter would build a form beyond the sphere, but it never has been done. It is easy for the mechanic to follow the lines and forms the other way until he arrives at the tetrahedron, where mathematics seem to be of little use to him in his search for regular bodies below it in uniformity. Would it be unreasonable to suggest that the mathematical lines of vibration, defined in the tetrahedron, have any relation to the triad principle of primary motion that pervades this whole universe? In order to have the reader understand this system of kinetic energy and the fourth condition of motion, I will employ a well-known form, one of the platonian figures, to illustrate. Take the hexahedron, or cube; commence to revolve it simultaneously on three axes, the six poles to represent the center of the six faces of the cube: the three axes will all stand at right angles to each other, and as there is no conflict with each other's lines of least resistance in that right angle position, they will maintain that relation to each other if free to act. The instant the three revolutions commence to act within the form, they produce three resultants, and as soon as the three resultants commence to act within the form, they form a resultant revolution with the three primary revolutions, all thus merging to one common center of revolution. The axes of the three resultant revolutions would be at an angle of forty-five degrees from the primary

axes and represent three of the six equilateral diagonals of the cube. Now, this resultant revolution, the product of the primary systems, has received from the three primary revolutions all of their energy, and as there is no centrifugal force shown in the form in either of the three planes of primary revolution, the centrifugal force shown in the product was derived from the substance of the form in the primary planes of motion; and as the three lines of least resistance of the three primary systems are crossed, the centrifugal forces of the resultant system are acting on opposite sides of the primary axis, and support three kinetic revolutions, the axes of which will be the other three equilateral diagonals of the cube. This action is a generative force and is constantly being renewed, for it is derived from the centrifugal force which is a spontaneity in nature; for as the axes of a revolving body are the lines of least resistance of that body, and the lines of least resistance in this case are crossed, the centrifugal force of the resultant revolution is acting on six opposite sides of the six poles of the three axes of the primary revolutions and becomes a generative force. You will see that the resultant axes of the three primary revolutions, the poles of which stand for two of the corners, of the cube, represent the diagonal between those two corners and cross the lines of least resistance of the three primary revolutions. The kinetic revolutions, created by the centrifugal force of the resultant revolution, form three resultant revolutions with the three primary revolutions, the poles of which represent the other six corners of the cube, between which the three axes run with their six poles. Thus you have the fourth condition of motion, or revolution. The four axes represent the eight corners of the cube, with their eight poles. Now, I claim that this system of vibratory mechanism is all between the ultimate parts and not of the form only in the final product of revolutions, or the final resultant, the only action that can be recognized by our senses; that the vibratory systems are within and behind the motions of the form, the same as a body revolving in one axis; as Newton described it, it is moving in two directions continually, centripital and centrifugal, but the only motion we see or can recognize by any of our senses is the motion in the curve or circle. If Newton had looked to the ultimate substance of the form, instead of to the illusive form for a solution of the problem, it would have saved him the trouble of inventing his Law of Gravitation; he would have seen that the motion of the form was an illusion and it was the ultimate substance that was moving in the two directions and that created the illusion of the motion of the form by vibration in the form.

I claim that this can be materially demonstrated, mechanically illustrated and mathematically proven. Science teaches that our earth is inclined $23\frac{1}{2}$ degrees to the plane of its orbit. Now, what I claim is that that inclination is the position assumed by the visible resultant axes; that it stands at right angles to the planes of its three orbits with the primary revolutions and is the invisible cause of its visible position; that there is a perfect mechanism in the operation of our planet that can be demonstrated by self-evident facts, that cannot be disproved. I believe that I was the first that advocated the theory that our earth is and has been revolving since its nebulous formation, on three primary axes that hold their position at right angles to each other, and maintain their parallelism in space; that the motion that we see and the position assumed as to its orbit are the resultant motion and position, a product of the invisible systems behind it or in it. This, my theory, appeared in the *Oakland Times* on the 11th and 29th of June, 1880.

Now, there is no such force as a centrifugal force in primary revolutions of a body—the mechanism is in the ultimate substance and not in the form—it is transferred from the primary revolutions to the product or resultant by the vibration of the absolute in the form, and as the lines of least resistance of the centrifugal forces of our earth are crossed, the force is converted into three kinetic revolutions connected with the resultant revolution of the primary revolution and creates the fourth condition of motion and revolution, all of which I claim that I can demonstrate to the satisfaction of any scientific mind.

I claim that when a system of that kind is organized and the form has free access to space, (and when I say free access to space I do not mean absolute suspension, but freedom with a limit for vibration, like a protoplasm, or jelly-fish in the ocean or other pliable environment) this fourth condition of vibratory revolution is the cause and origin of all life on this planet, both animal and vegetable. The internal form of beings is a function of their vibratory molecular construction; in other words, one might say that the component vibratory atoms determine the external form where it is not changed by the environments and the change reproduced in the reproduction of the specie called evolution; that at the origin of life the form is spherical and has a pressure toward a common center and is organized in the fourth condition of motion; that the system organizes any and all etherealized substances, and in the protoplasm, when first organized in the fourth

condition of motion, cannot be seen with the best microscope, but as it has a pressure towards a common center, its vibratory interior force soon brings the absolute or ultimate atoms closer together in a nucleus or body of a materialized or visible form called matter, and the change of form in man and the animals, caused by the environments, is only a change of the grosser part of man; the etherealized part or spirit is spherical, and that is not endowed with the attributes of Omnipresence, and is governed by the same principle of motion and revolution as the grosser part of man, just as our earth with its air and ether works in harmony in a mechanical system with the grosser part under one principle of action.

Now, after this digression, we return to our reference to the free access to space. This will organize a sphere with a pressure towards a common center, and if a planet organized in that way had no orbicular motion, there would be no tides, for the horizontal of the water would never change, but having an orbicular motion, the conflict of its axilliary and orbicular motion produces a change of the horizontal in two quarters of the planet of the horizontal of the water in each of the three planes of its orbicular revolutions, so that a planet has three tides—one for the plane with the moon, one for the plane with the sun, one for the plane in the big orbit with the sun—and these tides cross each other at right angles and merge; each faces the center of its orbicular revolution, and the earth maintains its parallelism in these revolutions, but is constantly changing its relative position as to that center; or, the three tides are constantly swinging around the earth. In the plane with the moon it swings around in twenty-eight days; in the plane with the sun it swings around in 365 days; in the plane of the great circle with the sun it swings around in 25,000 years.

Now, these tides are a condition of motion of the water of a planet, and like all other triad motions, the product of their action is the only motion that we can see, for we cannot see the separate tides for they merge into a joint product of action. These tides are a condition of motion, and the earth revolves around in that condition on its three primary axes and produces the three tides that merge, bringing a change every six hours. The reader will note that the tides are produced by dual causes in each plane, and if either of the causes ceases to act, there would be no tides. Now, the earth does not cease to revolve, but there is no motion at the poles in each plane of primary revolution, consequently there is no tide there for those planes, but a full tide there for the other plane of revolution that acts at right angles with it.

The tide of the great circle with the sun merges with the other two tides and the earth's relative position is constantly changing as to the center of that orbit, but as it swings around only once in 25,000 years, the human race has yet no record of that tide; but it has made many thousand swings around that center since this planet was nebulous. When the scientific world understands this theory, the emergence of this continent and the submergence of the Atlantas, the glacial period, the receding of the ocean at Norway and Spitzbergen, and the advancing of the ocean at other places, the alternate stratas of Arctic and tropical fossil animals and plants in Florida and Alaska, these are all made plain to the mechanical mind, for it is seen that the earth is changing the relative position of its poles as to the sun in that plane of its orbit, as well as in the other orbits around the sun and moon, all of which I can materially demonstrate, mechanically illustrate and mathematically prove.

If the earth was 25,000 years travelling once around its orbit in the plane with the moon, instead of 28 days, the changes in the tides that we now have every 14 days, at the new and full of the moon, would only occur once every 12,500 years, at the new and full of the moon. This system will account for the tide on the opposite side of the earth from the moon, that never has been explained mechanically, even grant the Newtonian theory of Gravitation to be true. But in this system there is one quarter of the circle of the earth in the plane with the moon that conflicts with the orbicular motion that is opposite from the moon, and one quarter that is facing the moon, so the change of the horizontal of the water occurs in those quarters every six hours in that plane of dimension or motion. The three tides are all acting at right angles to each other tide, each tide runs to nothing at its own axis, and is the deepest at the axis of its neighboring tide. I claim to be able mechanically to illustrate all the conditions of motion, the final product of which produce the tangible visible tides that we recognize by our senses and physical modes of observation.

When we go into the realm of form to figurate on the question of motion, it is limited to three planes or dimensions in its primary motion, and it can change its direction in three planes at the same time; but when we go into the realm of the reality to figurate, the question arises, is the absolute or ultimate substance of that form governed by the same limit in its motion? Is it limited more or less? Let me suggest that all motion of form, inertia, centrifugal force and momentum, of or in a form, is the product of the vibrations of the absolute or ultimate substance of that form. A form

can change its direction of motion by the vibration of its parts mechanically; but if it is an absolute solid, and not composed of parts, it would be as impossible to change a direction of a moving body as it would be to move it in opposite directions at the same time, and to do either one or the other it would have to possess the attributes of Omnipresence and be in two places at the same time. For it will appear as a self-evident fact to the student of science, when he has given this question the required study, that if an absolutely solid body, not composed of parts and not able to vibrate within its form, were moving north, it would be impossible for it to move east without first stopping its motion north; but in this realm of form, where the motion of form has deceived our senses so long in that regard that the scientists have made no distinction in regard to motion of the form and the absolute that creates and maintains it, the question of Omnipresence is as well defined or applied between north and east, as it is between north and south, or any other directions of dual or triad motions for an absolute solid. What I claim is that the atoms, the absolute of form, never change their directions of motion; that when an atom moves or is moved, it never changes the direction of that motion; that there is no power in the universe that can make it change its direction of motion; that when it is once in motion it keeps moving in that direction until it meets another atom and then it stops and starts in another direction. Now, this collision of atoms stopping and starting, is vibration pure and simple, vibration within the form. It makes no difference whether the form is a uniformity or a promiscuity, it is vibration all the same; the only difference is the vibration is in the cell or crystal or any other uniform structure, the joint product of all the vibration in the form operates mechanically in a system in the form. I would have the reader note here that there is a difference between vibration in the form and an alternate rapid motion of the form. Now, some scientists tell us that the action of the reed in the flute or organ and the tuning-fork is vibration; I claim that they are only alternate rapid motion of the visible form; that the vibrations are invisible actions of the absolute of the form that produced the motion of the form that we see, all of which was produced by the force of concussion or contact with some other form, either etherialized or tangible, and they in turn received their force from vibration, and so on ad infinitum. All the motion of a planet that organizes is a vibratory system of mechanism in the fourth condition of motion and would create but one common center of gravity,

so called, if it had no orbicular motion; but the orbicular motion, by forming a resultant motion with the axillary motion, changes the center of gravity, so called, in two quarters of the planet in each of the three planes of its orbicular motion.

Thus we have in the system, six quarters in the three planes that have a common center, and six quarters that do not have a common center of gravity. The question may be asked, why does a planet move in its orbit, and where does it get its motive power? The lines of vibratory force that would seek a common center, if the planet had no orbicular motion, are diverted from their course by the orbicular motion in two quarters of the circle in each plane of revolution in the three orbits, and seek a center pressure or gravity, so called, a little ahead of what it would be if the planet was at rest in its orbit, and impels the planet forward in its three orbits or three planes of revolution.

The question may be asked, what is the center of gravity? The center of revolution is an imaginary line drawn through the center of a revolving body from pole to pole. The center of gravity is an imaginary point where three such lines cross each other at right angles in their center; the point where all the mechanical lines of a planet, operating in the fourth condition of motion, cross the point where duration exists but where there is no measurement of time; the point from which all the motions of that planet are measured.

The question may be asked, what is time? Time is the measurement of events and has the same relation to form that motion has to matter. Without something to move, there can be no motion; without something to create the event, there can be no time. Even the event of the existence of our own body produces the illusion we call duration; but when we go into the realm of the reality, where there are no forms to measure events, (the Bible says, "Unto God, the Absolute, one day is as a thousand years and a thousand years is as one day") the absolute is not deceived by the illusions of forms, as our senses are here in this realm of form. What is a day, a month, a year? A day is the event of the earth revolving on its axis once in 24 hours. Place on the equator 24 houses an equal distance apart: you will have just one hour between each house. Then move them ten degrees farther north; the houses are much closer together, but it is an hour between them just the same. Then move them to the north pole, so the houses touch each other. Then cut a door from each house into the adjoining one, and by walking one way a man can walk a thousand

years into the past ; and by walking the other way, he can walk a thousand years into the future ; and by keeping step over the twelve o'clock mark he will be in the Everlasting Now, and there will be to him no past or future ; there will be no event to measure time for him ; the only thing he can recognize is the event of his own being. His own existence makes him recognize the condition we call duration, and if his body did not exist there would be no duration for him. No more than you can have momentum without matter, so time cannot exist without form, and cannot be measured without a motion of that form.

Some scientists may say that these things are governed by law ; that the fundamental principles connecting force and motion in the physical universe are obviously to be derived from experiments alone, since intuitive reasoning cannot possibly give us any information as to what may be, or what may not be a law of nature. But if we take the ground that there is no such thing as law, separate and distinct from matter or form, that the absolute of form is the law, or a law unto itself ; that it can act only in and through form ; that form is an illusion and not real ; that all experiments deal with form and cannot be performed without motion and vibration of and in that form and without a knowledge of the final limit of that motion and vibration, the experiment will be elusive and deceptive to our senses and can only be removed by the application of our intuitive reasoning faculties. Laws are not entities, or real, and cannot act. Laws do not execute themselves, are nothing and do nothing. All motion of form is the product of vibration and law cannot produce it. Vibration is produced by force and not by law, and motion is the product of its action. The absolute is the only thing that acts and it makes the form appear to our senses to do what the absolute cannot do—change its direction of motion—and it does it by the vibration of the units in the form.

The material laws, so called, expressed by mathematics, are few and simple, but the body of the science consists of a vast scheme of numerical computations whose value seems to appear in its application to astronomy and the other physical sciences, but as long as it does appear and is used by scientists, they will never arrive at the final truth of the mechanism of the universe ; but when they are satisfied to leave this vast scheme of fractions behind and use the few and simple principles of mathematics in the realm of the reality, they will arrive at better results in their astronomy and physics. The reader may aver that to call these energies producing these results metamorphic or molecular action

is simply to hide our ignorance; we get a name and nothing more. To speak dogmatically on subjects so obscure is a sign of the same ignorance. That may be true when we speak alone of the ultimate substance of form as it relates to what it is; but not when we speak of it as to what it does (and when I say what it does I mean to include vibration in the form and the motion of the form). Now, surely our reasoning faculties will sustain us in the assumption that, if a form cannot move in opposite directions at the same time, the absolute or ultimate substance of the form cannot do it. Now, that inquiry is removed from question to axiom by the self-evident fact as revealed to us by our senses as far as the form is concerned, and the same fact will appear to our understanding as revealed to us by our reasoning faculties, as far as the ultimate substance is concerned, unless we are willing to believe the unreasonable proposition that the absolute or ultimate substance of form possesses the attributes of Omnipresence. Now, if it is governed by the principle of possibility and impossibility in one phase or condition of its motion, may we not assume that the different phases or conditions are limited in number, and each, as far as condition is concerned, like the first, limited in action or motion? When we have found all the limits and applied the proper mathematics, shall we not arrive at infinity in stability, uniformity in action, and the mechanism for which we seek, if we apply our mathematics with the knowledge or belief that all parts of knowledge have their origin in metaphysics, and finally, perhaps, revolve into it, and that mathematics has not a fact to stand on that is not purely metaphysical?

What is mathematics based on? Mathematics is based on the hypothetical number one. And what is the hypothetical number one based on? Is it based on an animal, tree or stone? If it is, the animal, tree or stone are not the same to you as they are to me, and not the same to-morrow as they are to-day. Which one of our visions is true, or are they both illusions of the form to our senses of sight, and mathematics based on the absolute of the form—the real, not the illusion? Because we cannot recognize the absolute of form by our senses is no proof that it does not exist, and the fact that our senses cannot limit the divisibility of form is no proof that there is no limit. Quality and kind come to us by the exercise of our reasoning faculties by the process of comparison. Mathematics deals with vibration, dimension and motion. No man can apply mathematics in an empty room. He can say or think twice two are four. Twice two what are four what? Twice

two apples. Where are the apples? In Chicago. Then you are applying mathematics in Chicago, not in the empty room. When all the possible motions of a form have been created, both primary and kinetic, that form never takes more than one visible path or resultant motion as long as what the scientists call the cohesive attraction of the form is not disturbed; but where all the possibilities are not understood and the primary motions are unknown, the product or resultant becomes a puzzle, and you cannot unravel it by naming a law, as Newton tried to do with his apple. The same principle will apply to revolution as well as to motion, that the vibratory energy within the form in the final product of revolution, is not lost, but resolves itself into kinetic energy by a unison of the centrifugal force with the primary motions, and by crossing their lines of least resistance is thrown back into the primary revolution, or first cause, and creates a never-ending chain of vibratory cause and effect within the form.

Thus is employed the only possible primary revolutions, the resultant of the only possible kinetic revolutions, that derive their cause from the vibratory, centrifugal and generative forces from the final, visible, resultant revolution, together with that other vibratory force that a planet is constantly receiving from the outside, the ether or what scientists call the rays of the sun, and other etheralized substances that are now and ever have been entering into its control since the nebulous formation of this planet. As there is a pressure towards a common center—or, with the orbicular motions, common centers—it is continually being condensed or solidified, thus yielding up its vibratory force into the vibratory mechanism of our planet.

Can the reader contemplate the unthinkable amount of force that has been yielded up to the running of our planet by the solidifying or materializing of the vast amount of matter of which our earth is composed?

When form is moving north it is impossible for it to move south at the same time. Now, as between north and south, there is an infinity in stability, no wavering or deviating, no attributes of Omnipresence to cloud the student's mind, as far as that phenomena is concerned. Now, when all the possibilities of motion or revolution are created, there is an infinity in stability on all of its lines of motion or planes of revolution, and when form has free access to space and organizes in a system of mechanism and uniformity, there is a perfect infinity in the stability of the whole system; if it was not so, chaos, instead of order, would reign supreme.

I am an engineer by trade and know something about a steam boiler, and I will say that the only difference between the action of vibration in the steam boiler and in the dynamo in the powerhouse is that the vibratory energy in the boiler is vibration in promiscuity, has a pressure in all directions, is held in place by the shell of the boiler and is taken out in a pipe and used in the cylinder. The vibration in the dynamo is vibration in uniformity, and organizes in a mechanical system that confines itself and has a pressure toward a common center—a wire is run in and takes it out and uses it, for instance, in the motor under a car, that has less pressure than the dynamo. Here let me say that every rain-drop organizes that way and has a pressure toward a common center and not only organizes water, but heat and other etherealized substances in a sphere around it, as our earth does the atmosphere. And this solves the query of why a thunder-shower cools the air. The air being a poor conductor of heat, it cannot descend alone, so each rain-drop takes some down to the earth, which is a good conductor of heat.

There is no such condition as a constant pull from the center of a revolving body, caused by what Newton called the centrifugal force; the pull is caused by vibration and is a generative force; as the form is moving in two directions at the same time, as Newton showed, the resultant is what he called the centrifugal force. Now, that force being generative and from two causes, dual in its action and continually renewing that dual condition, the product must be an alternate condition of motion and rest; but our senses are not acute enough to detect the rest, for it is not an action of the form but the vibration of the ultimate substance of the form, and the illusive pull is the action of the absolute in form, or of form; and as I show in the illustration of the sheep, the units of the form are not doing what the form appears to our senses to be doing, and neither our sense of sight nor our sense of feeling is acute enough to detect the rest in the vibrations, which are always dual in their action. In any one plane any three points in space are always in one plane. The pull from the center of a revolving body seems like a constant pull from the center; we cannot detect the rest, but a second revolution will do it, and in the primary revolutions there is no centrifugal force of the form—that force is in the form and not of it, and is transferred to the product or resultant from the two primary revolutions. Now, if two primary revolutions are able to convert or divert their centrifugal force to a resultant revolution as they do, and three primary revolutions

divert their centrifugal forces to a common product of revolution as they do, why will not the common product or resultant revolution, by crossing its lines of least resistance, be able to convert its centrifugal forces through the kinetic energy back into the first primary revolution, and create a never-ending chain of vibratory action in a system of uniform mechanical action?

Now, in the common transactions of every day life, we think it nothing strange or unreasonable to see two or more separate and distinct physical causes operating to bring about one effect, as when we travel on a steamboat propelled by two engines, a coach drawn by six horses, or a boat rowed by ten men; but it seems never to have occurred to any one to look for more than one cause for gravitation and the tides. Now, what I claim is that all effects are the product of motions and vibration, and without motion and vibration there can be no effect; that the vibration in the form is a separate and distinct cause in each of its separate planes of dimension, and, when free to act, works in harmony to bring about one effect, and the effect is the only action we can recognize by our senses.

Let me illustrate this centrifugal force. Seat your self in a chair at the center of a revolving table, say forty feet in diameter; seat another man in a chair at the circumference or outer edge facing you; connect your hand with his by a string; then revolve the table at the rate of one hundred revolutions a minute. The man in the outer chair will pull on the string one-half of the way around during the first revolution, and slacken the string the other half; the second revolution he will pull and slacken twice, the third revolution he will pull and slacken four times; the fourth, eight times; the fifth, sixteen times; the sixth, thirty-two times, and so on, sixty-four, one hundred and twenty-eight, etc. How far would he have to double the pull and slack before it would deceive the sense of feeling of the man at the center, and make him think that it was a constant pull? But it never would be, if you ran it up into the hundreds of millions. As Tesla tells about that other condition of vibration, so this centrifugal force is not a constant pull but a generative force, and constantly being renewed. But no revolution was ever created by man so rapid that the second revolution, on another axis of the same form, would not form a resultant with the first centrifugal force and transfer the two centrifugal forces to the resultant revolution.

Let me give another illustration. I will stand you in a valley five miles away, facing a side hill with a uniform grade, at an angle

of forty-five degrees. I will mark the hill off in ten foot squares, with the diagonal of the squares facing you. I will then place two sheep on each corner of the squares, facing down the lines of the squares, and have them all commence to walk down the lines of the squares. I will ask you what you see on the hill. You will say that you see a band or herd of sheep that are so far away that you cannot see an individual sheep, but you see the band or herd that they create. I will tell you that a band or herd of sheep is not an entity, that it has no existence as a reality, that it is only a condition of the sheep; take away the sheep and where is your band or herd? I ask you what are they doing? You will say the band is coming straight down the hill, which would be on the lines of the diagonals of the squares. I hand you a spy-glass and you look through it at the band, and you say, "Oh! yes, I was mistaken; they are not coming straight toward me, it was an illusion of the sight; each sheep is coming at an angle of forty-five degrees to the diagonal of the squares. I can see the units that create the illusion, and not the form."

Apply this to the absolute of all form and you will see that the illusion can never be removed by our senses, for the absolute can never be seen. Anything real can have but one name, all other names are names of conditions; but in order to place these names properly we must know on which side of the line we stand, that line that lies between the realm of form and the realm of the real; and that line will be defined, not alone by studying what matter is, but what it does; for all the knowledge that can be grasped by the human mind is the product of action, as well as being, since all forms are created and maintained by action.

Some years since I visited the University of California, and enjoyed an interview with Prof. John Le Conte. While showing me his experimental appliances he had occasion to display the gyroscope, and referred to it as the mechanical paradox. I said to him, "Professor, why do you call the gyroscope a mechanical paradox? Is not the top as much a paradox as the gyroscope?"

He said, "Yes, fully as much, so I do not know why we have not called it such."

I then put the question, "What is your theory of the action of the top? The top is a cone sitting on its apex. Place a piece of wood in a lathe fashioned as true as human skill can build; turn it down as accurately as human art can accomplish; set it on its apex and level it with a spirit level, leave it to itself, and at the least oscillation it will fall, and the oscillation is bound to come.

No human being ever made a cone set on its apex ; but if you give it a spinning motion it will not fall? Now, Professor, what is your theory of the reason that it does not fall, when running as when standing?"

"Yes," he said, "that is the question—you have stated it correctly. We have but one theory and I am not prepared to say that it is correct ; but it is the only one we have, and we will have to keep it until we have another."

Then I said, "Professor, what is the theory?"

He replied, "It is impossible to create a *perfect* point; grind a needle down with the greatest of skill and then look at it through the microscope, and you will see a blunt point. The top not having a perfect point, works to an upright position on this imperfect point as it revolves."

"Professor," said I, "That theory will not work, there is nothing in it."

He laughingly said that he was not prepared to say that there was, but it was the only theory extant.

I continued: "Now, Professor, I have a theory why the top does not fall when running as it does when standing."

"What is it?" he inquired.

"I told him to let me have a piece of paper and allow me to demonstrate. I then marked out two tops, one standing vertical and the other at an angle of about thirty degrees, and showed that it was impossible for matter or form to move in more than three directions at the same time in its primary motions; that the top, when revolving, is fulfilling that limit in all its parts; that when the top is vertical these three motions are all at right angles to each other and have three resultant motions. Consider the two motions as defined by Newton in a revolving body, the centripetal and centrifugal, and a downward motion toward the center of the earth, the centripetal motion of the earth—but that motion we do not notice for we move with it. Now, the two resultant motions on opposite sides of the top, the product of the downward motion and the centripetal motion, press toward the axis of the top and form equilateral lines of pressure; but, as the downward motion never changes, if the top leans over a little the centripetal motion on one side of the top forms an obtuse angle and on the other an acute angle with the downward motion, thus throwing the top up to a vertical position, if the revolution is strong enough.

The Professor reflected a moment and said, "I am not prepared to say that you are wrong; I will look into it."

Illusions that are created and maintained by the motion of form are sometimes removed by the proper exercise of our senses, but the illusions that are created by the vibration of the absolute of the form, can only be removed by our reasoning faculties in connection with a knowledge of all the possible conditions of vibration within the form itself.

Speaking of the fourth condition of motion, I will say to those men who are talking so much about the bringing of rain by firing of cannon and exploding gases in the air, that there is a right way and a wrong way to explode and fire your cannon. You can shoot in uniformity or promiscuity, as explained in another place. When matter organizes in the fourth condition of motion, a sphere is the final limit of form and it has a pressure toward a common center; that sphere is held in that form by the fourth condition of motion, as is our earth, a cyclone or a waterspout. Now, in order to create that condition by the firing of cannon, it must be done mechanically. Take the hexahedron or cube, place it mechanically with the four cardinal points of the compass, take forty-eight cannon more or less—as long as the number is uniform in division with the six sides of the cube—place eight on the north side shooting west, eight on the south side shooting east, eight on the west side shooting up, eight on the east side shooting down, eight on the top shooting south, eight on the bottom shooting north. Then if these cannon are shot, one on each of the six sides simultaneously, in rapid succession until they are all discharged, you will create the three primary revolutions, as described in another place in this book; and the other kinetic system is a spontaneity and creates itself without cannon and merges with the primary system, and you have the fourth condition of motion of form, a sphere of air, and like a cyclone or a waterspout with a pressure toward a common center; and it will condense the moisture and produce rain as the cyclone and cloudburst do. On this coast it would gather the moisture and condense the vapor, that is constantly being drifted into the interior by the sea breeze, and hold it until it bursts, then you have the rain; but let me say that this should be done as high in the air as possible, for if done on the ground in a narrow valley it would not be a success. It should be performed on the top of a hill, so as to give it room to organize, and to act after organizing, and to travel in its three orbits.

Speaking again of the fourth condition of motion, let me say to the men who are experimenting with the flying machine, that if they will imitate the bird they will have better success. The bird

being the nucleus of a magnetic vibratory system, and being insulated with its feathers, a good non-conductor, the bird has the power with its wings to change in rapid succession the center of common pressure of the fourth condition of motion, up and down and forward, and the bird takes a visible resultant path; the faster the bird flies, the further forward the common center is thrown; the bird's orbicular motion forms a resultant with the axillary motion of the magnetic system around and in the bird's body and creates a pressure a little ahead of what it would be if the bird was at rest. The bird may have the power to change the common center to some extent, by the volition of its will, by a contraction of its muscles through the operation of its nerves.

I do not expect to gain credit from the scientific world by writing this pamphlet, for, amateur and unlettered as I am, I cannot claim that it has been done with that clearness and brilliancy which has distinguished the writings of men like Faraday, Darwin and Pasteur; but I do expect to see the day when the scientific world will be as unwilling to admit the truth of Newton's theory of the laws of gravitation and the tides, as they now are to admit those other theories that they had in their text books, such as, that nature abhors a vacuum, and that the sun's light was a radiation instead of a vibration through an intervening medium, and now in their text books, in their colloquial language, they say that balloons, hot air, etc., rise because they are light. In their older books it was stated more explicitly, and therefore much more clearly, that they possessed a quality called "levity," which was opposed to heaviness; heaviness made things tend downward, levity made things tend upward; it was a sort of action at a distance, at least it would have required such an hypothesis if it had survived until Newton told them that heaviness was due to the action of the earth.

I presume if some scientist had not proved that the air had weight the text books by this time would have told us that levity was due to the action of Heaven, and where is the theory received from Newton, "gravity" in place of "heaviness," any better than levity without a mechanical cause to support it? A mechanical cause was found for levity, and I claim that I have found a mechanical cause for gravity. Their "levity and gravity theory" acting in opposite directions, up and down, acting at a distance without any claim of an intervening medium or mechanical cause, had as much reason to support it, as their theory of the two tides, one on each side of the earth, acting in opposite directions from a cause acting in one direction.

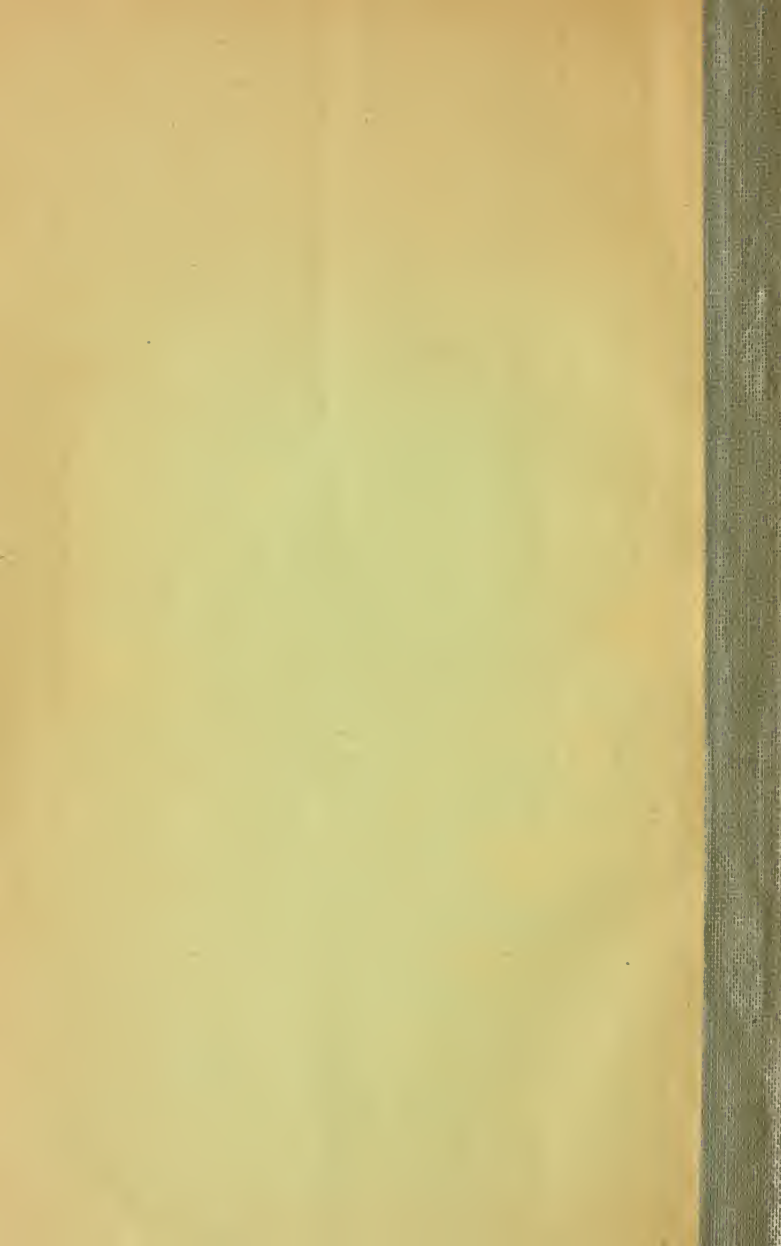
When Galileo said the earth revolved he was called crazy, and now that I say that the illusive, visible and resultant revolution of the form that he discovered, is only the resultant product of the vibratory mechanical systems of the real invisible revolutions of the ultimate substance of the form, I, too, will be called crazy. But I will console myself with the knowledge that these people of to-day are but the descendants of those who murdered Socrates, tolerated the persecutions of Galileo, and deserted Columbus; that the evolution of the human race is slow and many errors mingle with the knowledge transmitted from one generation to another; and it is too often the case, at this late day of toleration and enlightenment, that the persons who are the first to discover these errors are denounced as cranks and lunatics. It is difficult to dislodge error from the minds of some men who have sustained and believed them for a life-time; "convince a man against his will, he's of the same opinion still." I will add:

"When proven wrong by facts and truth,
He'll cling to hobbies taught in youth."

So it is, both in science and religion, men will cling to the crude theories of ancient times without either reason or sense for their support, and they do this rather than believe in a new theory having both reason and sense for support, and carrying indisputable facts for their conviction.







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